

We claim:

1. A material comprising
 - (A) from about 60 weight percent to about 95 weight percent SAP,
 - (B) from about 5 weight percent to about 40 weight percent fibers,
 - (C) from about 0.1 weight percent to about 30 weight percent total binder, and
having
 - (D) a basis weight of from about 100 gsm to about 1000 gsm,
 - (E) a density of from about 0.15 g/cc to about 3 g/cc, the material having
 - (F) a thickness Z dimension of from about 0.3 mm to about 3 mm, and
 - (G) a pliability of about 400 1/N or greater.
2. The material of claim 1, wherein the material is a nonwoven material.
3. The material of one of the previous claims, wherein the material comprises from about 70 weight percent to about 95 weight percent SAP.
4. The material of one of the previous claims, wherein the material comprises from about 80 weight percent to about 95 weight percent SAP.
5. The material of one of the previous claims, wherein the material comprises from about 85 weight percent to about 95 weight percent SAP.
6. The material of one of the previous claims, wherein the material comprises from about 5 weight percent to about 30 weight percent fibers.
7. The material of one of the previous claims, wherein the material comprises from about 5 weight percent to about 20 weight percent fibers.
8. The material of one of the previous claims, wherein the material comprises from about 5 weight percent to about 15 weight percent fibers.
9. The material of one of the previous claims, wherein the material comprises from about 0.1 weight percent to about 10 weight percent total binder which comprises a first binder, a second binder, and, optionally, a third binder, where each binder can be the same as or different from any other binder.
10. The material of one of the previous claims, wherein the material comprises from about 0.3 weight percent to about 6 weight percent total binder.

11. The material of one of the previous claims, wherein the material comprises from about 0.5 weight percent to about 4 weight percent total binder.

12. The material of one of the previous claims, wherein the material has a basis weight of from about 200 gsm to about 700 gsm.

5 13. The material of one of the previous claims, wherein the material has a basis weight of from about 250 gsm to about 500 gsm.

14. The material of one of the previous claims, wherein the material comprises has a basis weight of from about 300 gsm to about 450 gsm.

10 15. The material of one of the previous claims, wherein the material has a density of from about 0.2 g/cc to about 1 g/cc.

16. The material of one of the previous claims, wherein the material has a density of from about 0.22 g/cc to about 0.8 g/cc.

17. The material of one of the previous claims, wherein the material has a density of from about 0.24 g/cc to about 0.6 g/cc.

15 18. The material of one of the previous claims, wherein the material has a thickness Z dimension of from about 0.3 mm to about 2 mm.

19. The material of one of the previous claims, wherein the material has a thickness Z dimension of from about 0.3 mm to about 1.5 mm.

20 20. The material of one of the previous claims, wherein the material has a pliability of about 500 1/N or greater.

21. The material of one of the previous claims, wherein the material has a pliability of about 600 1/N or greater.

22. The material of one of the previous claims, wherein the material has a pliability of about 700 1/N or greater.

25 23. The material of one of the previous claims, wherein the material has a pliability of about 800 1/N or greater.

24. The material of one of the previous claims, wherein the material has a pliability of about 900 1/N or greater.

30 25. The material of one of the previous claims, wherein the material has a pliability of about 1200 1/N or greater.

26. The material of one of the previous claims further comprising

(H) a carrier.

27. The material of one of the previous claims, wherein the carrier comprises natural, synthetic, or a mixture of natural and synthetic materials.

5 28. The material of one of the previous claims, wherein the carrier comprises natural fibers, synthetic fibers, or natural and synthetic fibers.

29. The material of one of the previous claims, wherein the carrier comprises cellulosic fibers.

10 30. The material of one of the previous claims, wherein the carrier has a basis weight of from about 2 gsm to about 40 gsm.

31. The material of one of the previous claims, wherein the carrier has a basis weight of from about 5 gsm to about 30 gsm.

32. The material of one of the previous claims, wherein the carrier has a basis weight of from about 10 gsm to about 25 gsm.

15 33. The material of one of the previous claims further comprising

(I) a layer consisting essentially of

(a) synthetic fibers, and

(b) a third binder.

20 34. The material of one of the previous claims, wherein the synthetic fibers in the layer are polyester fibers.

35. The material of one of the previous claims, wherein the layer has a basis weight of from about 20 gsm to about 50 gsm.

36. The material of one of the previous claims, wherein the first binder is a bicomponent fiber.

25 37. The material of one of the previous claims, wherein the first binder is an emulsion polymer.

38. The material of one of the previous claims, wherein the second binder is a bicomponent fiber.

30 39. The material of one of the previous claims, wherein the second binder is an emulsion polymer binder.

40. The material of one of the previous claims, wherein the third binder is a bicomponent fiber.

41. The material of one of the previous claims, wherein the third binder is an emulsion polymer binder.

5 42. The material of one of the previous claims, wherein different binders are in different parts of the material.

43. The material of one of the previous claims, wherein the same binder is in different parts of the material.

10 44. The material of one of the previous claims, wherein different binders are in the same part of the material.

45. The material of one of the previous claims, wherein at least two binders are different from each other.

46. The material of one of the previous claims, wherein the material has been produced in a series of unit operations in a continuous process.

15 47. The material of one of the previous claims, wherein the continuous process comprises airlaying by means of one or more forming heads.

48. The material of one of the previous claims, wherein the material has

(J) a machine direction X dimension of from about 1 cm to about 1000 m

(K) a cross machine direction Y dimension of from about 2 cm to about 5 m, and

20 the material is in a substantially rectangular format and from about 90 weight percent to about 100 weight percent of the SAP in the material is located in SAP domains with a longest dimension aligned substantially in the machine direction X of the material.

49. A nonwoven material with a pliability of about 400 1/N or greater comprising from about 75 to about 95 weight percent SAP.

25 50. The nonwoven material of Claim 49 comprising from about 80 to about 95 weight percent SAP.

51. The nonwoven material of one of Claims 49-50 comprising from about 85 to about 95 weight percent SAP.

30 52. The nonwoven material of one of Claims 49-51 having a pliability of about 500 1/N or greater.

53. The nonwoven material of one of Claims 49-52 having a pliability of about 600 1/N or greater.

54. The nonwoven material of one of Claims 49-53 having a pliability of about 700 1/N or greater.

5 55. The nonwoven material of one of Claims 49-54 having a pliability of about 800 1/N or greater.

56. A process for the production of a material comprising depositing on a removable support or a carrier a mixture of SAP, fibers and binder, where the material comprises from about 60 weight percent to about 95 weight percent SAP and has a pliability of about 400 1/N or greater.

10 57. A multistrata fibrous web comprising:
(a) a plurality of first strata comprising matrix fibers and thermoplastic fibers;
(b) a plurality of second strata comprising functional particles arranged in separated lanes;
15 (c) wherein the first and second strata alternate through the web and the lanes of the second strata are arranged such that the lanes of adjacent second strata do not superimpose, or
(d) wherein the arrangement of the first and second strata is random.

20 58. The web of claim 57, wherein the lateral edges of the web are particle free.

59. The web of either of claims 57 or 58 wherein the lanes are parallel.

60. The web of any of claims 57 – 59 wherein the particles of the second strata cover at least 50% of the surface area of the stratum.

25 61. The web of any of claims 57 – 60 wherein the web includes 2, 3, 4, 4 or 6 second strata.

62. The web of any of claims 57 – 61 wherein the particles are SAP particles.

63. The web of any of claims 57 – 62 wherein the lanes are not continuous.

64. The web of any of claims 57 – 62 wherein the lanes are S-shaped.

65. The web of any of claims 57 – 62 wherein the lanes are hourglass-shaped.

66. A process for the production of a material comprising depositing on a removable support, a carrier or on a carrier on a support a mixture of SAP, fibers and binder, where the material comprises from about 60 weight percent to about 95 weight percent SAP and has a pliability of about $400\ 1/N$ or greater.

5 67. The process of Claim 66, wherein

(a) a layer of fibers and binder is deposited on a moving removable support, a carrier or on a carrier on a support to form a web, the movement being in a machine direction X,

10 (b) SAP is deposited in discreet lanes on the web of (a) in the machine direction, the lanes being spaced apart in the cross machine direction Y at a right angle to the machine direction,

(c) a second layer of fibers and binder is deposited on the moving web,

15 (d) a second layer of SAP is deposited in discreet lanes on the web of (c) in the machine direction, the lanes being spaced apart in the cross machine direction, where the SAP lanes of the second layer are not superimposed on the SAP lanes of the first layer when viewed from a thickness direction Z at right angles to the X and Y directions, or where the arrangement of the first and second layers of SAP lanes is random,

(e) optionally repeating steps (c) and (d) one or more times,

20 (f) heating the web one or more times to activate the binder,

(g) optionally densifying the web.

68. An absorbent core comprising:

(1) a material of one of the previous claims in combination with

25 (2) a second material,

where the second material is a second layer of the material of (1), a material of one of the previous claims which is not the material of (1), or a second material which is not a material of one of the previous claims.

69. A process for the production of an absorbent core comprising combining

(1) a material of one of the previous claims with

30 (2) a second material,

where the second material is a second layer of the material of (1), a material of one of the previous claims which is not the material of (1), or a second material which is not a material of one of the previous claims.

70. The absorbent core of Claim 68 or 69, wherein the second material is a SAP
5 containing material in which the SAP is in one layer of a single layer or multilayer second material and where the sap is substantially evenly distributed in the layer.

71. The absorbent core of one of claims 68-70, wherein the material and the second material combined by means of an adhesive.

72. An absorbent product comprising the material of one of claims 1-48, the
10 nonwoven material of one of claims 49-55, the material produced by the process of one of claims 66-67, or the web of one of claims 57-65 and one or more of

- (a) a fluid pervious topsheet,
- (b) a fluid impervious backsheet.

73. The absorbent product of Claim 72 in the form of a diaper, training pant,
15 incontinent device, feminine hygiene device, surgical drape, wound dressing, or cable wrap.